

Claims

## WHAT IS CLAIMED IS:

1. A method for inhibiting the activity of COX-2 in an organism, the method comprising the step of administering  
5 to the organism a composition comprising a therapeutically or prophylactically effective amount of an organic extract of a plant, wherein the plant is selected from the order consisting of Agavales, Apocynales, Arales, Asterales, Basidiomycetae, Brassicales, Caryophyllales, Cycadales,  
10 Ebenales, Euphorbiales, Fagales, Hydrocharitales, Lamiales, Liliales, Loasales, Malvales, Myrtales, Palmales, Pandanales, Papaverales, Piperales, Polemoniales, Polygalales, Primulales, Ranales, Rhamnales, Rosales, Rubiales, Rutales, Santalales, Sapindales, Scrophulariales,  
15 Umbellales, Urticales, and Violales.
2. The method of claim 1 wherein the inhibitory effect of the extract on COX-2 activity is greater than or equal to about 2 times greater than the inhibitory effect of the extract on COX-1 activity.
- 20 3. The method of claim 1 wherein the inhibitory effect of the extract on COX-2 activity is greater than or equal to about 10 times than the inhibitory effect of the extract on COX-1 activity.
4. The method of claim 1 wherein the extract of the  
25 Agavales order is from the family Agavaceae.
5. The method of claim 4 wherein the extract of the Agavaceae family is from the Pleomele genus.
6. The method of claim 1 wherein the extract of the Apocynales order is selected from the families consisting of  
30 Apocynaceae and Asclepiadaceae.

7. The method of claim 6 wherein the extract of the Apocynaceae family is selected from the genera consisting of Bleekeria and Strophanthus.

8. The method of claim 6 wherein the extract of the  
5 Asclepiadaceae family is from the genus Asclepias.

9. The method of claim 1 wherein the extract of the Arales order is from the Araceae family.

10. The method of claim 9 wherein the extract of the Araceae family is selected from the genera consisting of  
10 Amorphophallus, Anthurium, and Pinellia.

11. The method of claim 1 wherein the extract of the Asterales order is from the Asteraceae family.

12. The method of claim 11 wherein the extract of the Asteraceae family is selected from the genera consisting of  
15 Vernonia, Wedelia, and Xanthium.

13. The method of claim 1 wherein the extract of the Basidiomycetae order is from the Polyporaceae family.

14. The method of claim 13 wherein the extract of the Polyporaceae family is from the genus Grifola.

20 15. The method of claim 1 wherein the extract of the Brassicales order is from the family Brassicaceae.

16. The method of claim 15 wherein the extract of the Brassicaceae family is from the genera Brassica and Raphanus.

25 17. The method of claim 1 wherein the extract of the Caryophyllales order is selected from the families

consisting of Caryophyllaceae, Chenopodiaceae,  
Nyctaginaceae, Phytolaccaceae, and Polygonaceae.

18. The method of claim 17 wherein the extract of the  
Caryophyllaceae family is from the genus Saponaria.

5 19. The method of claim 17 wherein the extract of the  
Chenopodiaceae family is from the genus Beta.

20. The method of claim 17 wherein the extract of the  
Nyctaginaceae family is from the genus Pisonia.

21. The method of claim 17 wherein the extract of the  
10 Phytolaccaceae family is from the genus Trichostigma.

22. The method of claim 17 wherein the extract of the  
Polygonaceae family is from the genera Chorizanthe and  
Rumex.

23. The method of claim 1 wherein the extract of the  
15 Cycadales order is from the family Cycadaceae.

24. The method of claim 23 wherein the extract of the  
Cycadaceae family is from the genus Zamia.

25. The method of claim 1 wherein the extract of the  
Ebenales order is from the family Ebenaceae.

20 26. The method of claim 25 wherein the extract of the  
Ebenaceae family is from the genus Diospyros.

27. The method of claim 1 wherein the extract of the  
Euphorbiales order is from the family Euphorbiaceae.

28. The method of claim 27 wherein the extract of the  
25 Euphorbiaceae family is selected from the genera consisting

of Croton, Gymnanthes, Macaranga, Manihot, Ostodes, Phyllanthus, and Ricinodendron.

29. The method of claim 1 wherein the extract of the Fagales order is from the family Fagaceae.

5 30. The method of claim 29 wherein the extract of the Fagaceae family is from the genus Castanopsis.

31. The method of claim 1 wherein the extract of the Hydrocharitales order is from the family Hydrocharitaceae.

32. The method of claim 31 wherein the extract of the  
10 Hydrocharitaceae family is from the genus Elodea.

33. The method of claim 1 wherein the extract of the Lamiales order is from the family Verbenaceae.

34. The method of claim 33 wherein the extract of the  
15 Verbenaceae family is from the genera Callacarpa and Clerodendron.

35. The method of claim 1 wherein the extract of the Liliales order is selected from the families consisting of Commelinaceae and Liliaceae.

36. The method of claim 35 wherein the extract of the  
20 Commelinaceae family is from the genus Tradescantia.

37. The method of claim 35 wherein the extract of the Liliaceae family is from the genera consisting of Lilium and Smilax.

38. The method of claim 1 wherein the extract of the  
25 Loasales order is from the family Loasaceae.

39. The method of claim 38 wherein the extract of the Loasaceae family is from the genus Mentzelia.

40. The method of claim 1 wherein the extract of the Malvales order is from the families consisting of Bombaceae, Elaeocarpaceae, and Sterculiaceae.

41. The method of claim 40 wherein the extract of the  
5 Bombaceae family is from the genus Quararibea.

42. The method of claim 40 wherein the extract of the Elaeocarpaceae family is from the genus Elaeocarpus.

43. The method of claim 40 wherein the extract of the Sterculiaceae family is from the genera consisting of  
10 Guazuma, Helicteres, and Melochia.

44. The method of claim 1 wherein the extract of the Myrtales order is from the Myrtaceae family.

45. The method of claim 44 wherein the extract of the  
15 Myrtaceae family is from the genera Myrcia and Syzygium.

46. A method for inhibiting the activity of COX-2 in an organism, the method comprising the step of administering to the organism a composition comprising a therapeutically and prophylactically effective amount of an organic extract  
20 of a plant, wherein the plant is from the Boletaceae family and the genus Boletus.

47. A method for inhibiting the activity of COX-2 in an organism, the method comprising the step of administering to the organism a composition comprising a therapeutically  
25 and prophylactically effective amount of an organic extract of a plant, wherein the plant is from the Cyatheaceae family and the genus Cyathea.

48. A method for inhibiting the activity of COX-2 in an organism, the method comprising the step of administering  
30 to the organism a composition comprising a therapeutically

and prophylactically effective amount of an organic extract of a plant, wherein the plant is from the Umbilicariaceae family and the genus Umbilicaria.

49. The method of claim 1 wherein the extract of the  
5 Palmales order is from the family Arecaceae.

50. The method of claim 49 wherein the extract of the Arecaceae family is from the genera Caryota, Coccothrinax, and Scheelea.

51. The method of claim 1 wherein the extract of the  
10 Pandanales order is from the family Sparganiaceae.

52. The method of claim 51 wherein the extract of the Sparganiaceae family is from the genus Sparganium.

53. The method of claim 1 wherein the extract of the Papaverales order is from the family Papaveraceae.

15 54. The method of claim 53 wherein the extract of the Papaveraceae family is from the genus Bocconia.

55. The method of claim 1 wherein the extract of the Piperales order is from the families selected from Chloranthaceae, and Piperaceae.

20 56. The method of claim 55 wherein the extract of the Chloranthaceae family is from the genus Hedyosmum.

57. The method of claim 55 wherein the extract of the Piperaceae family is selected from the genera consisting of Peperomia and Piper.

25 58. The method of claim 1 wherein the extract of the Polemoniales order is selected from the families consisting of Boraginaceae and Solanaceae.

59. The method of claim 58 wherein the extract of the Boraginaceae family is selected from the genera consisting of Cordia and Lithospermum.

60. The method of claim 58 wherein the extract of the Solanaceae family is selected from the genera consisting of Capsicum and Solanum.

61. The method of claim 1 wherein the extract of the Polygalales order is selected from the family consisting of Polygalaceae.

62. The method of claim 61 wherein the extract of the Polygalaceae family is selected from the genus consisting of Polygala.

63. The method of claim 1 wherein the extract of the Primulales family is selected from the families consisting of Myrsinaceae and Theophrastaceae.

64. The method of claim 63 wherein the extract of the Myrsinaceae family is from the genus Myrsine.

65. The method of claim 63 wherein the extract of the Theophrastaceae family is from the genus Jacquinia.

66. The method of claim 1 wherein the extract of the Ranales order is from the families consisting of Lauraceae and Ranunculaceae.

67. The method of claim 66 wherein the extract of the Lauraceae family is from the genus Cinnamomum.

68. The method of claim 66 wherein the extract of the Ranunculaceae family is from the genus Paeonia.

69. The method of claim 1 wherein the extract of the Rhamnales order is from the family Rhamnaceae.

70. The method of claim 69 wherein the extract of the Rhamnaceae family is from the genus Ziziphus.

5 71. The method of claim 1 wherein the extract of the Rosales order is selected from the families consisting of Fabaceae, Rosaceae and Saxifragaceae.

72. The method of claim 71 wherein the extract of the Fabaceae family is selected from the genera consisting of  
10 Adenanthera, Albizzia, Cassia, Erythrina, Inga, Millettia, and Tephrosia.

73. The method of claim 71 wherein the extract of the Rosaceae family is from the genus Eriobotrya.

74. The method of claim 71 wherein the extract of the  
15 Saxifragaceae family is from the genus Mitella.

75. The method of claim 1 wherein the extract of the Rubiales order is from the family Rubiaceae.

76. The method of claim 75 wherein the extract of the Rubiaceae family is selected from the genera consisting of  
20 Berreria, Genipa, Hamelia, Nauclea, and Psychotria.

77. The method of claim 1 wherein the extract of the Rutales order is selected from the families consisting of Meliaceae, Rutaceae, and Simaroubaceae.

78. The method of claim 77 wherein the extact of the  
25 Meliaceae family is selected from the genera consisting of Dysoxylum, Scindapsus, and Trichilia.



79. The method of claim 77 wherein the extract of the Rutaceae family is selected from the genera consisting of Clausena and Zanthoxylum.

80. The method of claim 77 wherein the extract of the  
5 Simaroubaceae family is selected from the genera consisting of Brucea and Picramnia.

81. The method of claim 1 wherein the extract of the Santalales order is from the family Loranthaceae.

82. The method of claim 81 wherein the extract of the  
10 Loranthaceae family is from the genus Phoradendron.

83. The method of claim 1 wherein the extract of the Sapindales order is from the families Anacardiaceae and Icacinaceae.

84. The method of claim 83 wherein the extract of the  
15 Anacardiaceae family is from the genus Dracontomelon.

85. The method of claim 83 wherein the extract of the Icacinaceae family is from the genus Pyrenacantha.

86. The method of claim 1 wherein the extract of the Scrophulariales order is selected from the families  
20 consisting of Bignoniaceae and Gesneriaceae.

87. The method of claim 86 wherein the extract of the Bignoniaceae family is from the genus Macfadyena.

88. The method of claim 86 wherein the extract of the Gesneriaceae family is from the genus Cyrtandra.

89. The method of claim 1 wherein the extract of the  
25 Umbellales order is selected from the families consisting of Apiaceae and Araliaceae.

90. The method of claim 89 wherein the extract of the  
Apiaceae family is from the genus Apium.

91. The method of claim 89 wherein the extract of the  
Araliaceae family is from the genera Arthophyllum and  
5 Brassaiopsis.

92. The method of claim 1 wherein the extract of the  
Urticales order is selected from the families consisting of  
Moraceae and Ulmaceae.

93. The method of claim 92 wherein the extract of the  
10 Moraceae family is selected from the genera consisting of  
Dorstenia, Ficus, and Streblus.

94. The method of claim 92 wherein the extract of the  
Ulmaceae family is from the genus Celtis.

95. The method of claim 1 wherein the extract of the  
15 Violales order is from the family Flacourtiaceae.

96. The method of claim 95 wherein the extract of the  
Flacourtiaceae family is from the genera Pangium and  
Ryparosa.

97. The method of claim 1 wherein the organic extract  
20 is a purified composition obtained by a method comprising:

(a) contacting the plant with an organic solvent  
to remove an extract from the plant wherein the extract  
inhibits COX-2 activity; and

(b) isolating the extract with COX-2 inhibitory  
25 activity.

98. The method of claim 97 wherein the extract  
selectively inhibits COX-2 activity.

99. The method of claim 97 wherein step (a) further comprises mixing the plant with the organic solvent and stirring the resulting mixture at a temperature between about 25° C and the boiling point of said solvent for at least one  
5 minute.

100. The method of claim 97 wherein the organic solvent is selected from the group consisting of hydrocarbon solvents, ethers, chlorinated solvents, acetone, ethyl acetate, butanol,  
10 ethanol, methanol, isopropyl alcohol and mixtures thereof.

101. The method of claim 97 wherein the organic solvent is non-polar.

102. The method of claim 101 wherein the non-polar organic solvent is dichloromethane or hexane.

103. The method of claim 97 wherein step (b) further comprises separating the solvent from the organic extract by evaporating the solvent.  
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104. A method of treating or preventing COX-2 mediated inflammation or an inflammation-associated disorder in an  
20 organism, the method comprising administering to the organism a composition comprising a therapeutically or prophylactically effective amount of the purified composition according to claim 97.

105. The method of claim 104 wherein the inflammation-associated disorder is arthritis.  
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106. The method of claim 104 wherein the inflammation-associated disorder is pain.

107. The method of claim 104 wherein the inflammation-associated disorder is fever.

108. The method of claim 104 for use in the treatment or prevention of cancer.

109. The method of claim 108 wherein the cancer is epithelial cell cancer.

5       110. The method of claim 109 wherein the epithelial cell cancer is colon, breast, prostate, bladder, or lung cancer.

111. The method of claim 104 for use in the treatment or prevention of central nervous system disorders.

112. The method of claim 111 wherein the central nervous  
10 system disorder is Alzheimer's Disease.